

*A = Stand Boiler*

*B = Cold Water Supply*

*C = Outlet to range or  
other boiler (heater).*

*D = Hot Water return  
from heater to A.*

*E = Hot Water pipe to  
bath, sink, etc,  
and to expansion  
pipe.*

Invention is  
in use of pipe G  
to connect return D to  
pipe E, or to boiler A  
near the top of A to  
allow heated water in  
G to pass to E without  
passing thru body of  
boiler in A, when  
water is drawn from E.

[This Drawing is a reproduction of the Original on a reduced scale.]

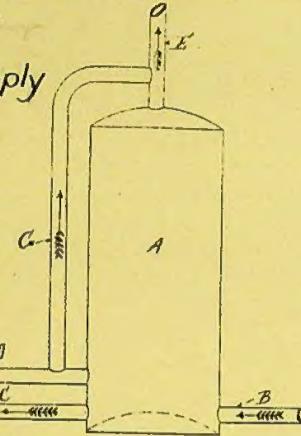


Fig. 1.

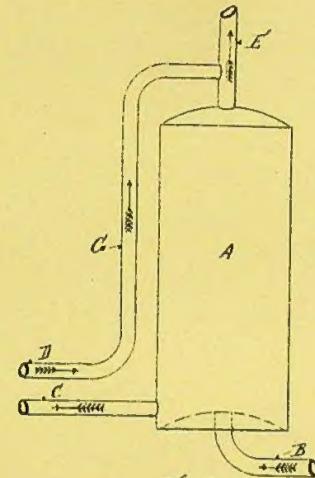


Fig. 3.

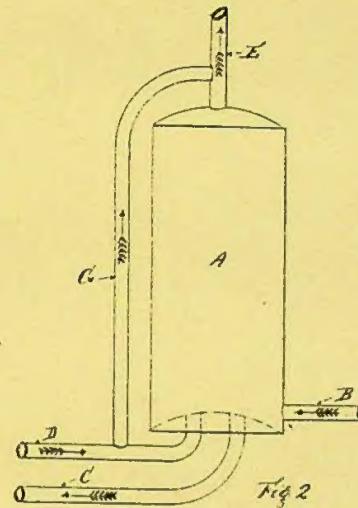


Fig. 2

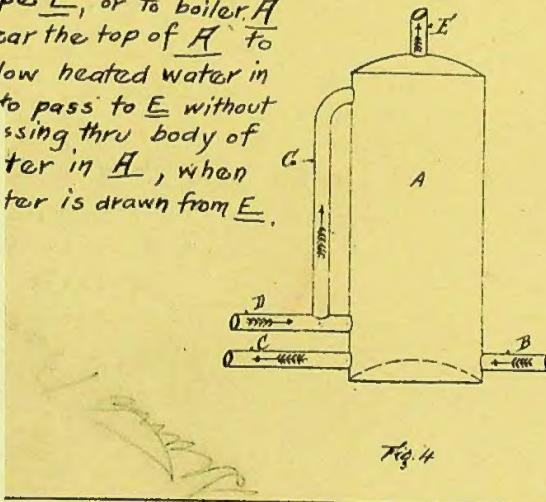


Fig. 4

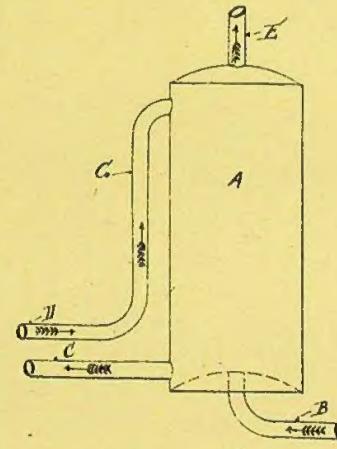


Fig. 6.

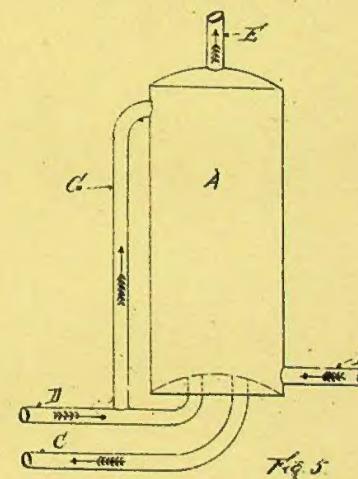
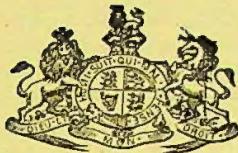


Fig. 5.



A

*Date of Application, 22nd Oct., 1889**Complete Specification Left, 5th July, 1890—Accepted, 9th Aug., 1890*

## PROVISIONAL SPECIFICATION.

## Improvements in or relating to Kitchen-range and other Boilers for Heating Water for Domestic and other Purposes.

I, JOSEPH HORROCKS of 10 Union Street Southport Sanitary Plumber, Hot Water and Ventilating Engineer, do hereby declare the nature of this invention to be as follows:—

This invention refers to improvements in or relating to cylinders employed in connection with kitchen-range and other boilers for heating water for domestic and other purposes and consists in providing means whereby the old and objectionable nuisance of rumbling in hot-water cylinders at present employed will be entirely removed. It is well known that the cause of the aforesaid nuisance arises through the boiling water or steam from the boiler behind the fire coming in contact with the volume or body of water of a lower temperature in the said cylinder. To overcome this defect I provide the ordinary hot-water cylinder with copper or other tubes or pipes disposed between the return pipe from the boiler to the cylinder and the upper end of the latter, or between the return pipe and the hot-water-pipe leading from the said cylinder to the expansion pipe, or pipe conveying the heated water to the bath, sink, and other places, by which arrangement hot water can be drawn direct from the boiler behind the fire without passing through the cylinder. This arrangement of tubes also facilitates circulation between the boiler and the cylinder when water is not being drawn from the same, the boiling water or steam passing into the upper end of the cylinder, or into the outlet hot-water pipe as desired, or at a point considerably above the water in the cylinder for supplying the boiler behind the fire.

Dated the 21st October 1889.

EDMUND CHADWICK,  
Agent.

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## COMPLETE SPECIFICATION.

## Improvements in or relating to Kitchen-range and other Boilers for Heating Water for Domestic and other Purposes.

I, JOSEPH HORROCKS of 10 Union Street, Southport in the County of Lancaster, Sanitary Plumber, Hot Water, and Ventilating Engineer, do hereby declare the nature of my said invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention refers to improvements in or relating to cylinders employed in connection with kitchen-range and other boilers for heating water for domestic and other purposes and consists in providing means whereby the old and objectionable nuisance of rumbling in hot-water cylinders at present employed will be entirely removed. It is well known that the cause of the aforesaid nuisance arises through the boiling water or steam from the boiler behind the fire coming in contact with the volume or body of water of a lower temperature in the said cylinder. To overcome this defect I provide the ordinary hot-water cylinder with copper or other tubes or pipes disposed between the return pipe from the boiler to the cylinder and the upper end of the latter, or between the return pipe and the hot-water pipe leading from the said cylinder to the expansion pipe, or pipe conveying the heated water to the bath, sink, and other places, by which arrangement hot water can be drawn direct from the boiler behind the fire without passing through the cylinder. This arrangement of tubes also facilitates circulation between the boiler and the cylinder when water is not being drawn from the same, the boiling water or steam passing into the upper

[Price 6d.]

*Horrocks' Improvements in Kitchen-range and other Boilers for Heating Water, &c.*

end of the cylinder, or into the outlet hot-water pipe as desired, or at a point considerably above the water in the cylinder for supplying the boiler behind the fire.

## DESCRIPTION OF DRAWINGS.

Figs. 1 to 6 are vertical elevations of hot-water cylinders and pipe connections 5 employed in conjunction with kitchen-range and other boilers for heating water for domestic and other purposes with my improvement applied to prevent the old and objectionable nuisance of rumbling.

In all the figures the same letters are employed to indicate corresponding parts.

The arrows on the various figures indicate the direction the water travels to and 10 from the cylinder and pipes.

A is the hot-water cylinder; B the cold-water supply pipe; C the outlet from the cylinder A to the kitchen-range or other boiler; D the hot-water return pipe from the kitchen-range or other boiler to the cylinder A, and E is a pipe for conveying hot water from the cylinder A to the bath, sink, or other places, also to 15 the expansion pipe.

My invention consists in providing the pipe G to couple the hot-water return pipe D with the pipe E, as shown in Figs. 1 and 2, by which arrangement hot water can be drawn direct from the boiler behind the fire without passing through the cylinder A, thereby preventing boiling water and steam coming in contact 20 with the volume or body of water of a lower temperature in the cylinder A.

Fig. 3 is an arrangement wherein the pipe D is disconnected from the cylinder A and coupled direct to the pipe E by the pipe G forming my improvement.

In another arrangement the pipe G couples the pipe D to the upper end of the cylinder A, as shown in Figs. 4 and 5, by which arrangement hot water can be drawn 25 direct from the boiler and passed to the upper end of the cylinder A without passing through the volume or body of water of a lower temperature in the lower or bottom end of the cylinder A. Fig. 6 is an arrangement wherein the pipe D is disconnected from the lower end of the cylinder A, but is coupled to the upper end of the latter by the pipe G forming my improvement.

The pipes B, C, D, E, and G are connected to the cylinder A in the usual manner, and can be provided with union joints or their equivalents to facilitate fixing.

Having thus stated the nature of my invention and described the mode of performing the same I would have it understood that I do not confine myself to the precise details or configuration of the parts I have shown and described, which are 35 obviously capable of considerable variation according to circumstances, without departing from the principle of my invention, but what I claim and desire to be secured to me by Letters Patent is:—

1. Coupling the hot-water return pipe D to the outlet pipe E on the hot-water cylinder A by means of the pipe G or its equivalent for the purpose specified substantially as described.
2. Coupling the hot-water return pipe D to the upper end of the cylinder A by means of the pipe G or its equivalent for the purpose specified substantially as described.

Dated the 20th June 1890.

EDMUND CHADWICK,  
Agent.